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# Return on strategic effectiveness – the need for synchronising growth and development strategies in the hotel industry using revenue management

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## ABSTRACT

The purpose of this paper is to identify the essential determinants, and highlight the importance, of synchronising the growth and development strategies of hotel companies. The paper aims to analyse preconditions to successful and stable business performance and customer loyalty. The paper is based on the hypothesis that strategic and organisational effectiveness helps to create preconditions to stable business in the future, which is reflected in satisfactory growth, financial strength and solvency, and results in creating added value. The five-year financial data of three hotel companies with similar business orientation from Istria County (Croatia) were used to test the model for synchronising growth and development strategies in the hotel industry and the fuzzy logic-based growth-development synchronisation coefficient. The model was tested on multi-annual results (the period 2010–2014), and conclusions and recommendations were made for a future work.

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## 1. Introduction

The central interest of modern micro-economic analysis is often linked to issues relating to the market behaviour of companies and, in turn, to the selection of business strategies. In this context, business strategy selection is a vital determinant both in defining the company and in establishing and forecasting value creation and preservation. Creating company value is closely tied to long-term company equilibrium and expected business and financial results. These must be viewed in light of the opportunities and threats as well as strengths and weaknesses that a company could achieve through the action strategies it has selected. Companies capable of creating and preserving value are most often companies that are economically as well as socially sound, possess well-developed strategies and operations, and have loyal clients. Many scientists agree that customer loyalty is a central concept of marketing science (Aaker, 2002; Berzosa, Davila, & de Pablos Heredero, 2012; Jasinskas, Streimikiene, Svagzdiene, & Simanavicius, 2016; Jones & Sasser, 1995; Kandampully &

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Hu, 2007; Reichheld, 1993; Virvilaite, Piligrimiene, & Kliukaite, 2015). The importance of loyalty is visible through the calculation that the attraction of new customers is much more expensive than the retention of existing ones (Hallowell, 1996; Holmund & Kock, 1996; Kuo, Chang, Cheng, & Lai, 2013; Reichheld & Sasser, 1990; Wong & Sohal, 2002).

Execuational strategies and business policies are analysed to ensure they are aligned both mutually and with the company's mission and business goals, within the internal and external business environment. According to Diakoulakis, Georgopoulos, Koulouriotis, and Emiris (2004) a competitive advantage can be achieved by firms that succeed by valuing their intangible assets i.e., knowledge, technology and strategy, and by developing new products and services. Metaxas, Koulouriotis, and Spartalis (2016) discussed the problem of frameworks and systems that are based on the mechanistic view of management that sees an organisation as a machine that produces money and not as organisations to transform themselves when required.

Research conducted in recent years has indicated the need to examine the connections between business operations, organisational structures, management, entrepreneurship and strategies. As a result of such research, crucial links have emerged between corporate entrepreneurship and entrepreneurial strategies (Urban, 2012). Chandler (1962) believes that organisational structure follows strategy, whilst Porter (1998) emphasises that a company's generic strategy generally translates into different organisational structures. These views are echoed by Galbraith (2002) who identifies a link between a firm's strategy and organisational model. Raddats and Burton (2011) developed a new framework to show how organisational structure changes in response to changes in strategy.

Although some authors refute Penrose's (1959) classical theory of healthy growth, in his book *The Theory of the Growth of the Firm*, it is undeniable that the strategies of today's companies are increasingly leaning towards this theory, which represents modern resource-based thinking. Such thinking primarily refers to (1) the creation of competitive advantage, (2) sustaining competitive advantage, (3) isolating mechanisms and (4) competitive advantage and economic rents (Rugman & Verbeke, 2002).

Revenue management has emerged from the framework of similar thinking. A systems process designed to increase revenue with regard to demand, reservation distribution and changing prices, revenue management involves an analytical process for predicting customer behaviour at the micro market level. Considering that this foremost refers to action taken to understand clients and their perceptions of product or service value and, accordingly, to harmonising product prices, sales and availability to each business segment, revenue management has found its application largely in the hotel industry. Hence, revenue management combines data mining and operational research with strategy, primarily for the purpose of understanding customer behaviour.

Therefore, it may be said that good revenue management is a crucial precondition to the Strategic Benchmarking for Value Process, which is the backbone of the system for creating and enhancing customer satisfaction. Satisfied customers tend to buy products and services on a lasting basis, thus providing a flow of revenue which the management can transform into profit, free cash flow or use to attract investors.

Strategic and organisational effectiveness provides the preconditions to stable business operations in the future, which are reflected in satisfactory growth, financial strength and solvency, and in the creation of added value.

The purpose of this paper is to define the crucial determinants and importance of synchronising the growth and development strategies of hotel companies, in the context of strategic effectiveness in achieving positive business and financial results in the future. Parameters were selected based on theoretical background and a coefficient of synchronised hotel company growth and development was created based on a fuzzy model. The model was tested on hotel companies based on multi-annual results, and conclusions and recommendations were made for future work.

## **2. Theoretical background**

### ***2.1. Correlation between a company's development and growth strategies***

In the given economic framework, company development refers to the process of transition from an existing state to a new state, which should be more effective as it brings many changes in all areas of business. This foremost involves increasing the value of production output and improving technology and organisation. In addition, business efficiency often requires the development of new departments or the reorganisation of old ones, the expansion of product or service programmes, the improvement of working conditions and the improvement of overall business organisation.

Such qualitative changes in a company which lead to changes in the structure of future functionality and overall performance are usually the result of adjustments to market conditions. The changes refer to the suitability of company operations relative to involvement in different markets and to the company's internal structure and optimal production output. In this way a company adapts its internal capabilities to market opportunities. The inevitability of change in terms of company development is a reaction to change that is constantly occurring on the market and the primary objective of which is survival. Through development, the company ties its structure in with all the effects of production output, and adapts to emerging market conditions through its line of products and services. Change results in a new relationship with the environment, the outcome of which should be new potential for the company. Positive change occurs when the company is at a higher level of development, which is reflected in enhanced results relative to the environment (for example, relative to a branch of industry or economic activity), while a lower level of development is reflected in results that are poorer than expected.

Econometric analyses of companies at various levels of total factor productivity have shown that companies capable of improving the effectiveness of their business processes in a specific period of time have a greater probability of maintaining above-average output in later time periods (Antonelli, Crespi, & Scellato, 2015).

Today, managers are overly concerned with managing current and short-term earnings, while almost completely neglecting to foster the learning organisation and culture that stable growth requires (Laurie & Harreld, 2013). Six common failings occur: the absence of the right type of supervision that would let managers be free to focus on team development and potential clients, the failure to put the best and most skilled staff in management positions, the building of an unsuitable team in terms of capabilities and goals aimed at a business model oriented towards a value creation and preservation strategy, the wrong approach to assessing success with regard to putting in place and monitoring plans, the wrong way of managing finances, and the failure to tap into the core competencies of the organisation

in which the Chief Executive Officer (CEO) should play a leading role in initiating growth within the framework of available resources (Laurie & Harreld, 2013).

Management strategies are crucial in shaping the volume of knowledge needed to create and maintain total factor productivity (TFP), a vital factor of business development (Antonelli et al., 2015). TFP largely depends on the amount of investment made in research and development (R&D), but also on decisions that are made with regard to the acquisition of specific knowledge. In this respect, research into organisational economics has shown that repeated interaction exists between knowledge accumulation and creating routines; this interaction should be valorised and used in organisational purposes to help create dynamic opportunities that facilitate systematic reliance on innovation as a competitive tool (Antonelli et al., 2015).

Business growth strategy by basic definition has the intention to win a larger market share by determination of the target market, design of a detailed set of activities and development of efficient customer channels. In focus of recent theories, growth strategy has to be focused on enhancing customer value by efficient customer management and expanding revenue opportunities (Kaplan & Northon, 2005). Therefore, company growth is a result, as well as a measure, of company development. It refers to a quantitative increase in the volume of product/service production, foremost, through the introduction of new production or service capacities with no change to the existing structure. In addition to a quantitative increase in the volume of business, development also implies a qualitative increase, improvement and innovations to the existing business. Sustainable growth comes from the entire company, not only from some particular product or service (Leinwand & Mainardi, 2016). It can be concluded that growth represents a quantitative component of change; and development, a qualitative one.

There are many studies concerning the correlation between core competencies, skills, performance and corporate growth. The values and behaviours that contribute to the unique social and psychological environment of an organisation as well as excellent team management are the basics for successfully carrying out core competencies and skills. Hence it is necessary to (Yang, 2015):

- define core competencies and skills,
- define the 'core product or service',
- determine the relationship between core competencies and skills,
- adjust the core competencies, and
- put in place a strategic process for managing core competencies.

High growth expectations and the accordingly implemented strategies are mostly unsustainable in the mid-term period. Such growth expectation could be damaging to the business (Groucutt, 2007). Successful companies possess business strategies for developing new technologies, entering new markets, creating new jobs and cultivating an innovative culture. Identifying core competencies and efficiently combining competencies with core skills are vital strategic activities in gaining returns in the long run (Yang, 2015).

Businesses which engage in strategic planning are more likely to achieve higher sales growth, return on assets, profit and employee growth (Berman, Gordon, & Sussman, 1997; Carland & Carland, 2003; Gibson & Casser, 2005; Mitchelmore & Rowley, 2013; Wijewardena, De Zoysa, Fonseka, & Perera, 2004). Mazarrol, Reboud, and Soutar (2009) found that firms that possessed formal written business plans were found to be more likely

to have stronger support network partnerships, formal quality assurance and the ability to lead change among employees. Some studies have used annual sales, number of employees, return on sales, growth in sales and growth in employee numbers (Brush & Vanderwerf, 1992).

A quantitative increase of business volume serves the fundamental goal of company growth and that is to increase returns. However, in addition to being seen as the scope of growth (the growth of dimensions), the category of company growth can also be viewed through the growth of sales, the growth of business quality, the growth of a company's power and strength, and the growth of company value.

The drivers of growth in all the categories mentioned can be divided into internal and external drivers. Internal drivers are factors of improved utilisation of production or service capacities, through better, more rational, more effective and more efficient usage, while external drivers are usually capital investments, the most important and most common source of growth.

## **2.2. Revenue management in the Strategic Benchmarking for Value context**

The starting points of the Strategic Benchmarking for Value (SBV) process are the increase of free cash flow and return on equity (ROE), essential determinants of value creation. Primarily, this process involves identifying business strategies, critical success factors and related key performance indicators; setting up a strategic benchmarking system; aligning company goals with the goals of strategic analysis; and then monitoring and adjusting value creation and preservation models and procedures.

Organisational effectiveness can only be measured by observing quantitative success factors that are tied to qualitative factors. Qualitative factors determine the value, purpose, meaning and vision of a company. In this context, strategic thinking and leadership play prominent roles in creating and running an organisation. Hence, for managers to efficiently manage resources, it is vital they identify and define basic objectives (Fairholm & Card, 2009).

Return on strategic effectiveness (ROSE) can be said to depend on productivity and growth. Productivity is the outcome of development and is measured by an increase in effectiveness (profitability), by an improvement in asset turnover and by capital structure (leverage). An increase in market share and the introduction of new products and services should lead to growth, which is measured by the increase of cash flows. Growth will enhance profitability only if it is aligned with a company's unique resources and competencies (Urban, 2012). In the hotel industry, ROSE primarily depends on revenue management effectiveness. As demand patterns are becoming increasingly unpredictable and dependent on user-generated contents, the most important dynamic variables of Hotel Revenue Management are reviews, guest satisfaction and prices. Hence, at the heart of revenue management rests the demand concept based on changing prices (Choi & Mattila, 2004).

What makes hotels suitable to be able to apply Revenue Management ([www.xotels.com](http://www.xotels.com)):

- fixed capacity,
- perishable product,
- high fixed costs and low variable costs,
- product can be priced differently,

- demand evolves,
- product can be sold in advance, and
- market can be segmented.

A successful revenue management is based on efficiently controlling customer demands. Two interconnected strategic leverages a hotel company can apply to that end are pricing and duration of customer use. Prices can be fixed (one price for the same service for all customers for all time) or variable (different prices for different times and different customer segments), while duration is predictable or unpredictable. Using variable prices to control demand is conceptually a simple process that is applied in the form of various discounts on prices for all customers or for individual classes of customers (Noonea, McGuireb, & Rohlfs, 2011). Effective revenue management not only maximises revenue in periods of high demand, but also helps to stimulate demand in periods of low demand, without the need for large deviations in prices. Hence, revenue management in the hotel industry should be a long-term strategic tool for growth and development, within the context of generating more revenue and higher profitability in the future.

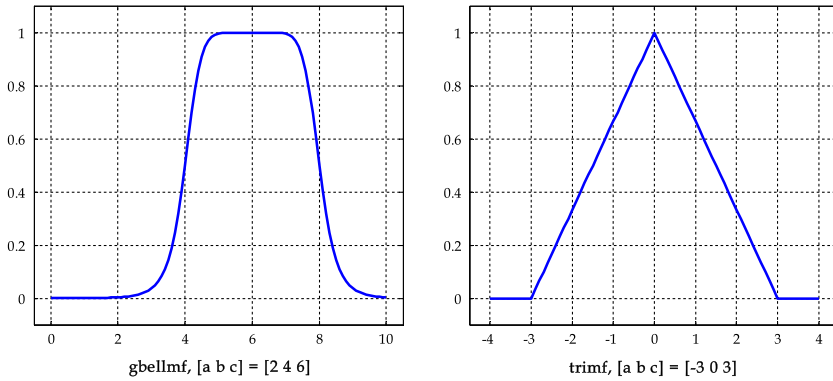
### **2.3. Fuzzy sets applied to solving economic problems**

Solving economic problems involves not only measuring and monitoring specific phenomena in a given period, but also calls for a type of thinking based on the experience of different kinds of experts. In seeking and designing models for solving problems of an economic nature, logical solutions can be found not only by combining numerical and non-numerical information but also by using models adapted to the human mind-set. The mathematical theory of fuzzy subsets makes it possible to include subjectivity and/or uncertainty in seeking objectivity.

A fuzzy set is used to describe an input space to an output space, firstly introduced by L.A. Zadeh (1965) the theory for fuzzy sets in an attempt to deal with fuzzy situations of the real world like uncertainty, vagueness and incompleteness. Buckley (1985) incorporated the fuzzy set theory into the traditional analytical hierarchy process and became a suitable tool for solving real-world multi-criteria decision-making problems (Büyükoçkan, 2004; Fu, Chu, Chao, Lee, & Liao, 2011; Gil-Lafuente, 2005; Huang & Wu, 2005; Jeng & Bailey, 2012; Lin, Lee, & Chen, 2009; Merigó & Gil-Lafuente, 2010; Sipahi & Timor, 2010). It has been used in the fields of service and tourism (Chen & Wang, 2010; Cho & Lee, 2013; Gil-Lafuente, Merigó, & Vizuete, 2014; Petrovic-Lazarevic & Wong, 2000; Wang & Durugbo, 2013).

Fuzzy logic has two different meanings. In a narrower sense, it is a logic system that is an extension of binary logic, and in a broader sense, it is practically synonymous to the fuzzy set theory. The starting point of fuzzy logic is mapping input space to an output space (The MathWorks, 2010).

The fuzzy set  $A = \{x, \mu_A(x) \mid x \in X\}$  is a set without clearly and precisely defined boundaries, meaning it can also contain the elements  $x \in X$  that have only a partial degree of membership to set  $A$ . Membership is described by the membership function (MF)  $\mu_A(x)$  with a range covering the interval  $[0, 1]$ . In other words, a membership function is a curve that defines how the elements of input set  $X$  are mapped to a specific degree of membership. Although there are a great number of different membership functions, two very frequently applied membership functions were used for the purpose of this paper (Figure 1).



**Figure 1.** Generalised bell and triangular membership functions. Source: Brlečić Valčić (2014).

These are:

- The generalised bell membership function (gbellmf) expressed as

$$f(x) = \frac{1}{1 + |(x - c)/a|^{2b}} \tag{1}$$

is dependent upon coefficients  $a$ ,  $b$  and  $c$ , where generally  $b > 0$ , and  $c$  defines the centre of the curve;

- The triangular membership function (trimf) is expressed as

$$f(x) = \left\{ \begin{array}{ll} 0, & x \leq a \\ \frac{x - a}{b - a}, & a \leq x \leq b \\ \frac{c - x}{c - b}, & b \leq x \leq c \\ 0, & c \leq x \end{array} \right\} \tag{2}$$

where parameters  $a$  and  $c$  allocate the points of the triangular function on the x-axis, while parameter  $b$  allocates the peak of the triangle.

Fuzzy sets are a basis for fuzzy theory. In inference, most commonly used are mathematical process descriptions with linguistic rules expressed as:

$$\text{IF } (x \text{ is } LVx) \text{ THEN } (y \text{ is } LVy) \tag{3}$$

where  $LVx$  and  $LVy$  are the values of linguistic variables defined by fuzzy sets over a range of values of input sets  $X$  and  $Y$ , respectively. The value range of an input or output parameter is defined by an interval from its lowest to its highest value (Brlečić Valčić, 2014).

Each input and output variable has to be defined by a corresponding number of linguistic variables that describe the features of a given variable. For the purpose of this paper, an equal number of linguistic variables is assumed for all input and output variables. In this case, linguistic variables can be said to belong to the set  $\{LV_1, LV_2, \dots, LV_m\}$ .



When several output variables are used to design a fuzzy inference system (FIS), they can be interconnected by different fuzzy operators such as AND (intersection), OR (union), NOT, etc. If the IF-THEN rules are to be applied to interconnect all possible combinations that can be made from  $n$  input variables, one output variable and  $m$  linguistic variables, then only the AND operator can be used and  $m^n$  rules must be realised.

In general form, any IF-THEN rule of a fuzzy inference system with  $n$  input variables  $(x_1, x_2, \dots, x_n)$ ,  $m$  linguistic variables and one output variable ( $y$ ) can be expressed using the AND operator, as follows

$$\text{IF } (x_1 \text{ is } LV_1) \text{ AND } (x_2 \text{ is } LV_2) \text{ AND } \dots \text{ AND } (x_n \text{ is } LV_n) \text{ THEN } (y \text{ is } LV_y) \quad (4)$$

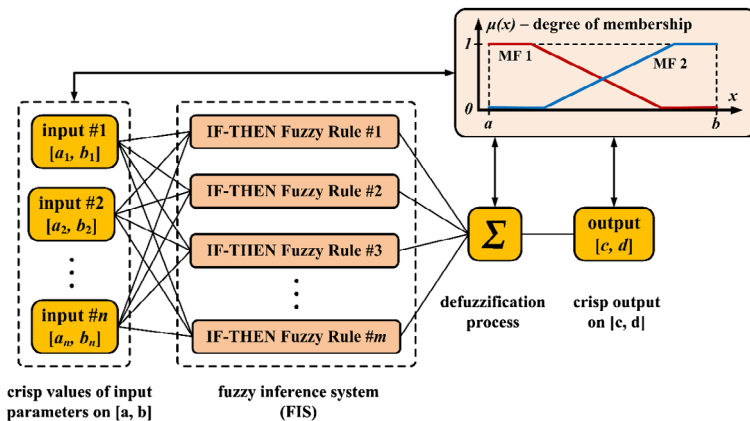
where the linguistic values  $LV_1, LV_2, \dots, LV_n$  belong to the previously defined set  $\{LV_1, LV_2, \dots, LV_m\}$ , while  $LV_y$  is the linguistic variable that describes some concrete state of the output variable (Brlečić Valčić, 2014).

Unlike in classical Boolean logic, in fuzzy theory the AND operator (intersection) may be generalised using a number of different procedures such as algebraic product, algebraic sum, bounded sum, bounded difference, etc. In this model, the AND operator is realised in the minimisation procedure. In other words, if a fuzzy rule connects two fuzzy sets A and B using the AND operator, the degree of membership of their intersection C is obtained by the expression

$$\mu_C = \min(\mu_A, \mu_B). \quad (5)$$

In general, whenever a fuzzy model is developed, an FIS is created. From a practical viewpoint, the entire procedure as illustrated in Figure 2 consists of several steps:

- select the input and output variables, give them names and define their value ranges,
- describe input and output variables using linguistic values,
- select (type, number) and model membership functions (MF) for each input and output variable,
- determine the required fuzzy IF-THEN rules to connect input and output variables with linguistic values, and apply fuzzy operators and implication methods, and
- defuzzify.



**Figure 2.** Simplified presentation of the FIS creation process and the mutual interaction of process phases. Source: Brlečić Valčić (2014).

Because the final decision, that is, FIS output is based on testing all IF-THEN rules defined, it follows that the outputs must be combined and taken jointly into consideration. This is the aggregation phase. In the aggregation process, fuzzy sets representing the outputs of each individual rule are grouped into one joint fuzzy set. While several methods are available for this process, the maximising method has been used in this paper.

Defuzzification is carried out to obtain defuzzified FIS output variable values. The most commonly used defuzzification method is the centroid method. This method determines the coordinates of the centre of gravity  $T(y_0, \mu_0)$  of the area below the curve of aggregated membership function  $\mu(y)$  relative to the range of output variable  $y$ , where the coordinate  $y_0$  is the defuzzified output value.

### 3. Methodology

#### 3.1. Defining the concept of the growth-development synchronisation coefficient

Quantitative measures of business activities are typical of the production industries. To assess the quality of revenue in the hotel industry, however, this paper uses value or financial measures.

The first measure and also the first parameter in determining the coefficient of growth-development synchronisation (G&D coefficient) is the asset turnover coefficient, which measures the intensity of business activities with which a company uses its assets (Belak, 2014). A comparison of this indicator within an industry and, especially, in hotels operating in similar conditions (similar destinations, similar visitor numbers in the region, etc.) provides a good illustration of the efficiency of assets usage. If a company is able to increase this coefficient, in most cases it is likely to improve its overall performance and balance structure. The coefficient is expressed as:

$$\text{Asset turnover coefficient} = (\text{sales revenue})/(\text{total asset}). \quad (6)$$

The control measure of the asset turnover coefficient is not a conventional control measure, but rather is derived from the average of the industry based on experiential relationships in the economy which performs well in its totality (Belak, 2014). For a company to be considered sound, the value of this coefficient should be at least 1. The value varies by industries and, for example, amounts to 1 in production industries, 2 in commerce and 3–9 in intellectual services. Unsatisfactory value of this ratio may indicate the need for improvement in the area of working capital management and management of long-term assets (Palepu & Healy, 2008) as well as the area of human resource effectiveness (Helfert, 2005) and the area of effective revenue management (Noonea et al., 2011).

The EBITDA/asset ratio was the second parameter selected to determine the G&D coefficient. Because earnings is a complex concept, and net profit results from the effects of different categories of income and expenditure, and gain and loss, these measures can be fully understood only when they have been examined from a number of perspectives. Ratio can indicate the need for improvements in business processes regarding asset utilisation, operating processes and operating expenses management (Helfert, 2005). To be a useful measure of earnings, EDITBA relies on its control measure. For calculations in this paper, EDITBA/asset, one of several comparative ratios, was used. The general control measure for EDITBA/asset is 13.50% (Belak, 2014).

The third parameter used in determining the G&D coefficient was net profit over equity capital. Because the sum of net profit and depreciation in five years is expected to earn the entire equity capital in typical business operations, the expected net profit over capital amounts to 12% (Belak, 2014). This ratio can indicate the need for improvements regarding adjustments to industry conditions, competitive strategy analysis, operating management, investment management and liability management (Palepu & Healy, 2008).

Business Excellence was selected as the fourth parameter in determining the G&D coefficient. Aimed at creating value for owners, Business Excellence is a managerial system and organisational process of strengthening, developing and improving business performance. The system focuses on different areas within a company's organisation, ranging from management and client orientation to managing information, people and business processes, to achieve superior performance (Brlečić Valčić, 2014; Metaxas et al., 2016). Because of its proven quality, the BEX (Business Excellence) Index has been selected to determine business excellence in this paper.

The BEX Index is defined by four influence-weighted indicators according to the following expression (Belak, 2014):

$$\text{BEX} = 0.388 \times ex_1 + 0.579 \times ex_2 + 0.153 \times ex_3 + 0.316 \times ex_4, \quad (7)$$

where  $ex_1$  is the profitability indicator;  $ex_2$  is the value creation indicator;  $ex_3$  is the liquidity indicator; and  $ex_4$  is the financial strength indicator, defined as follows:

$$ex_1 = \text{EBIT}/(\text{total asset}), \quad (8)$$

$$ex_2 = (\text{income after tax})/(\text{equity} \times \text{price}), \quad (9)$$

$$ex_3 = (\text{working capital})/(\text{total assets}), \quad (10)$$

$$ex_4 = 5 \times (\text{income} + \text{depreciation} + \text{amortisation})/(\text{total liabilities}). \quad (11)$$

According to BEX Index values, companies fall into the following categories:

- good companies with a BEX Index higher than 1,
- companies with a BEX Index between 0 and 1, in need of improvements in their business operations, and
- companies with a BEX Index lower than 0, whose existence is threatened.

The final parameter for determining the G&D coefficient is value for money. Not only is this indicator based on minimum purchase price as an economic category but it also signals maximum purchase effectiveness and efficiency ([www.businessdictionary.com](http://www.businessdictionary.com)) and is, therefore, a crucial factor in assessing consumer satisfaction, a vital category of future revenue generation. The source of the indicator for the needs of this paper was the service [www.booking.com](http://www.booking.com).

The reference values as well as control and corrective measures of input parameters in the model for calculating the G&D coefficient are presented in Table 1.

This enables the easy interpretation of results derived using the model proposed in this paper as well as the implementation of corrective measures in case of unsatisfactory reference values.

**Table 1.** Reference values of input variables with control and corrective measures.

Indicator	Reference value	Control / corrective measure
Asset turnover	> 1.00 ≤ 1.00	Comparison with similar companies and planned Asset turnover. Significant improvements of business processes are required particularly in: revenue management, cost leadership strategy, productive asset utilisation, investment management, working capital management and management of long-term assets.
EBITDA / asset	> 13.50 % ≤ 13.50 %	Comparison with similar companies and planned EBITDA / asset. Improvements of business processes are required particularly in effective asset utilisation, operating processes and operating expenses management.
Net income / equity	≥ 12.00 % < 12.00 %	Comparison with similar companies and planned Net income / equity. Additional improvements in terms of adjustments to industry conditions, competitive strategy analysis, operating management, investment management and liability management.
BEX	≥ 4.00 (≥ 2.00) & (< 4.00) (≥ 1.00) & (< 2.00)  < 1.00	Investments in business processes are satisfactory. Additional investments in business processes are required. Additional investments in business processes are required, particularly in leadership excellence, production and supply chain, strategic agility, continuous improvement, partnerships and intellectual capital. Significant investments in business processes are required, particularly in leadership excellence, production and supply chain, strategic agility, continuous improvement, partnerships and intellectual capital.
Value for money	Frequency counts (numbers and percentages)	Upgrading of customer needs in order to improve customer satisfaction.

Source: Authors.

### 3.2. Developing the growth-development synchronisation coefficient based on fuzzy logic

The following parameters with related values were applied to a Fuzzy Inference System to develop the G&D coefficient:

- Asset turnover coefficient with related range [0, 5],
- EBITDA/asset with related range [0, 0.5],
- Net income over equity capital with related range [-0.05, 0.3],
- Business Excellence with related range [-2, 8],
- Value for money with related range [1, 10], and
- G&D coefficient output parameter with related range [1, 5].

The reference values as well as control and corrective measures regarding the output parameter of the model, i.e., the G&D coefficient, are presented in Table 2.

Each input and output variable was described using the linguistic variable values from the following set:

{very low (VL), low(L), medium (M), high (H), very high (VH)}.

Because only the AND operator was used in creating the FIS, for defining all fuzzy rule combinations with five input parameters and their five associated linguistic values, a total of  $5^5 = 3125$  IF-THEN rules were required. In addition to this concept, the Technique for Order Preference by Similarity to Ideal Situation (TOPSIS) was used to evaluate multiple alternatives against the selected criteria (Saghafian & Hejazi, 2005).

In general form, any IF-THEN rule of a FIS with five input variables and one output variable can be expressed by the AND operator as follows:

$$\left. \begin{aligned} & \text{IF } (x_1 \text{ is } a) \text{ AND } (x_2 \text{ is } b) \text{ AND } (x_3 \text{ is } c) \dots \\ & \text{AND } (x_4 \text{ is } d) \text{ AND } (x_5 \text{ is } e) \text{ THEN } (y \text{ is } f) \end{aligned} \right\} \quad (12)$$

where all linguistic variables belong to set  $\{(VL), (L), (M), (H), (VH)\}$ , i.e., to its equivalent form  $\{1, 2, 3, 4, 5\}$ .

For the needs of this model, the IF-THEN rules have not been additionally weighted. Therefore, the indexed form of an arbitrary IF-THEN rule in the FIS structure for developing the G&D coefficient can be expressed in Matlab notation (The MathWorks, 2010) as follows:

$$a \ b \ c \ d \ e, f(w) : r \quad (13)$$

where  $\{a, b, c, d, e\}$  and  $f$  are linguistic variable values of input and output parameters, respectively,  $w \in [0, 1]$  indicates the weight applied to each rule and  $r$  indicates whether an AND (1) or an OR (2) rule is applied. Moreover, the output value  $f$  according to TOPSIS approach is determined as the mean value of input linguistic variable values  $a, b, c, d$  and  $e$  rounded to the nearest integer. For example, a small, but illustrative number of 3125 fuzzy rules are shown in Table 3.

**Table 2.** Reference values of the G&D coefficient with associated corrective measures.

Indicator	Reference value	Control / corrective measures
G&D coefficient	$\geq 4.00$	Growth and development business strategy is satisfactory.
	$(\geq 2.00) \ \& \ (< 4.00)$	Additional improvements in customer management both with expanding of revenue opportunities are required.
	$(\geq 1.00) \ \& \ (< 2.00)$	Additional improvements in determination of competencies and skills, core products or services, and the relationship between core competencies and skills are required. Adjustment of the core competencies is needed with putting in place a strategic process for managing core competencies.
	$< 1.00$	Significant improvements in determination of competencies and skills, core products or services, and the relationship between core competencies and skills are required. Adjustment of the core competencies is needed with putting in place a strategic process for managing core competencies.

Source: Authors.

**Table 3.** Truncated list of 3125 fuzzy rules within TOPSIS approach with five inputs and one output.

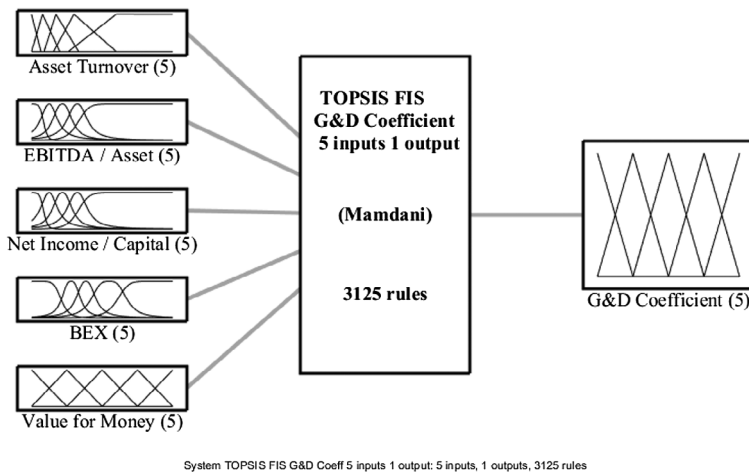
Rule #	Indexed form of IF-THEN rule
1.	5 5 5 5 5, 5 (1) : 1
2.	5 5 5 5 4, 5 (1) : 1
3.	5 5 5 5 3, 5 (1) : 1
⋮	⋮
111.	5 5 1 3 5, 4 (1) : 1
112.	5 5 1 3 4, 4 (1) : 1
113.	5 5 1 3 3, 3 (1) : 1
⋮	⋮
996.	4 3 1 1 5, 3 (1) : 1
997.	4 3 1 1 4, 3 (1) : 1
998.	4 3 1 1 3, 2 (1) : 1
⋮	⋮
3123.	1 1 1 1 3, 1 (1) : 1
3124.	1 1 1 1 2, 1 (1) : 1
3125.	1 1 1 1 1, 1 (1) : 1

Source: Authors.

The FIS architecture for developing, i.e., fuzzy modelling of the G&D coefficient in terms of five predefined inputs (asset turnover, EBITDA / asset, net income / capital, BEX index, value for money), 3125 fuzzy TOPSIS based rules and one output (G&D coefficient) is shown in Figure 3.

The geometry of the membership function curve of input variables was selected to ensure that the linguistic variables are mapped as representatively as possible on to the defined range of values, in particular where the interpretation of the value of individual input variables is concerned. Generalised bell membership functions (1) were used for input variables EBITDA / asset, net income / capital and BEX index, while triangular membership functions (2) were used for input variables asset turnover and value for money as well as for the output variable G&D coefficient. Parameter values (*a, b, c*) of used membership functions (1) and (2) are presented in Table 4. The centroid method was used in the defuzzification process.

The 3D visualisations of surfaces which present the mapping of two selected input parameters on to the output parameter are presented in Figures 4 and 5.

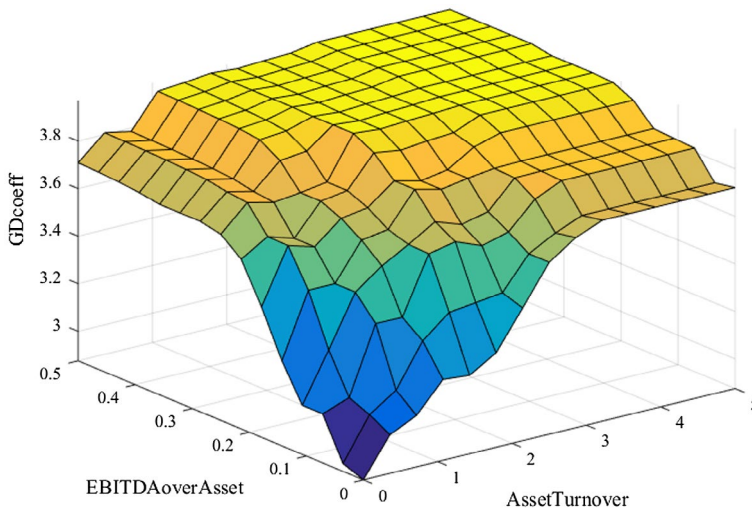


**Figure 3.** FIS structure for fuzzy modelling of the G&D coefficient. Source: Authors.

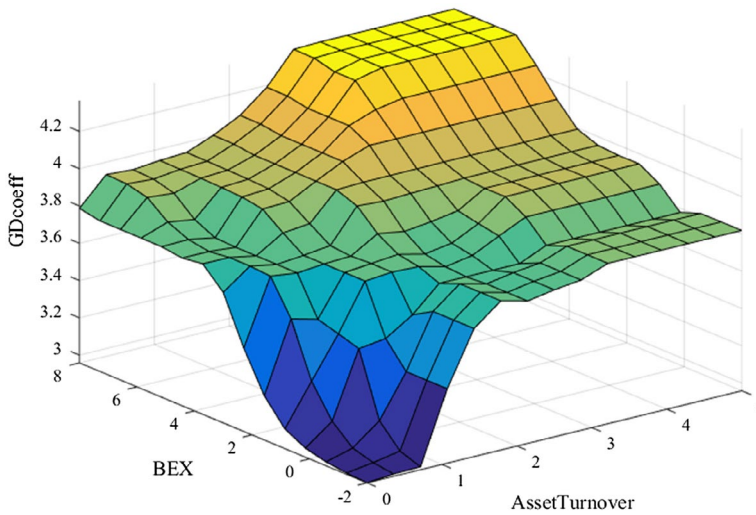
**Table 4.** MF parameter values (*a, b, c*) of input and output variables.

Variable name	Variable type	Variable range	Type of MF	Values of MF parameters ( <i>a, b, c</i> ) with respect to linguistic variables (VL, L, M, H, VH)
Asset turnover	Input	[0, 5]	<i>trimf</i>	VL (-1.25, 0, 0.3333), L (0, 0.3889, 1), M (0.4444, 0.8611, 1.667), H (0.7778, 1.5, 3), VH (1.3, 3, 1000)
EBITDA / asset	Input	[0, 0.5]	<i>gbellmf</i>	VL (0.105, 7.47, -0.0622), L (0.0348, 1.064, 0.062), M (0.03823, 1.24, 0.109), H (0.0407, 1.14, 0.1617), VH (0.216, 5.39, 0.3806)
Net income/ capital	Input	[-0.05, 0.3]	<i>gbellmf</i>	VL (0.0735, 5.23, -0.0586), L (0.0244, 1.06, 0.0332), M (0.0222, 1.24, 0.0694), H (0.0225, 1.14, 0.106), VH (0.151, 5.39, 0.2636)
BEX index	Input	[-2, 8]	<i>gbellmf</i>	VL (2.1, 3.81, -2), L (0.6968, 1.38, 0.8), M (0.746, 1.24, 1.844), H (1.29, 1.65, 3.48), VH (2.76, 3.24, 6.836)
Value for money	Input	[1, 10]	<i>trimf</i>	VL (-1.25, 1, 3.25), L (1, 3.25, 5.5), M (3.25, 5.5, 7.75), H (5.5, 7.75, 10), VH (7.75, 10, 12.25)
G&D coefficient	Output	[1, 5]	<i>trimf</i>	VL (0, 1, 2), L (1, 2, 3), M (2, 3, 4), H (3, 4, 5), VH (4, 5, 6)

Source: Authors.



**Figure 4.** Surface visualisation of G&D coefficient in terms of EBITDA/Asset ratio and Asset turnover. Source: Authors.

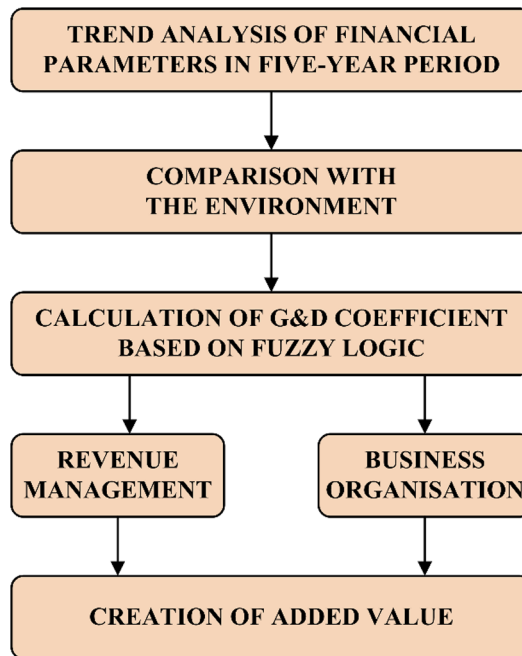


**Figure 5.** Surface visualisation of G&D coefficient in terms of BEX Index and Asset turnover. Source: Authors.

Figure 4 shows the visualisation of G&D coefficient surface in terms of EBITDA/Asset and Asset turnover, and Figure 5 shows the output, i.e., G&D coefficient in terms of the BEX Index and Asset turnover.

### **3.3. Design of a conceptual model for synchronising growth and development strategies in the hotel industry**

In order to ensure enhanced business efficiency in the future, a conceptual model for monitoring the synchronisation of growth and development strategies is proposed. The simplified structure of this model is presented in Figure 6.



**Figure 6.** Proposed conceptual model for monitoring the synchronisation of growth and development strategies. Source: Authors.

The basic step of the proposed conceptual model involves analysis of a company's financial parameters during the five-year period and comparison with its close competitors in the business environment under similar business conditions. This mainly refers to monitoring changes in the categories of revenue, EBITDA and profit, as well as in other categories such as added value, operational cash flows, financial strength and business excellence.

Calculating the growth-development synchronisation coefficient (G&D coefficient) based on a fuzzy model provides information concerning the need to invest in efficient revenue management and in business organisation in order to create added value.

Added value creation is a key platform for business efficiency. By properly managing this category a company can ensure multiple beneficial effects in business operations such as an increase in its product/service prices, setting itself apart from its competitors, protecting itself against competition with the possibility of reducing prices, having a stronger focus on business through target market segments and so on.

#### 4. Results and discussion

Five-year financial data for the period 2010–2014 of three Croatian hotel companies (A, B and C) from Istria County were used to test the model for synchronising growth and development strategies in the hotel industry and the fuzzy logic based growth-development synchronisation coefficient.

Data were drawn from the Bisnode – Poslovna Hrvatska database ([www.poslovna.hr](http://www.poslovna.hr)). Data pertaining to the value-for-money parameter were drawn from the Internet portal



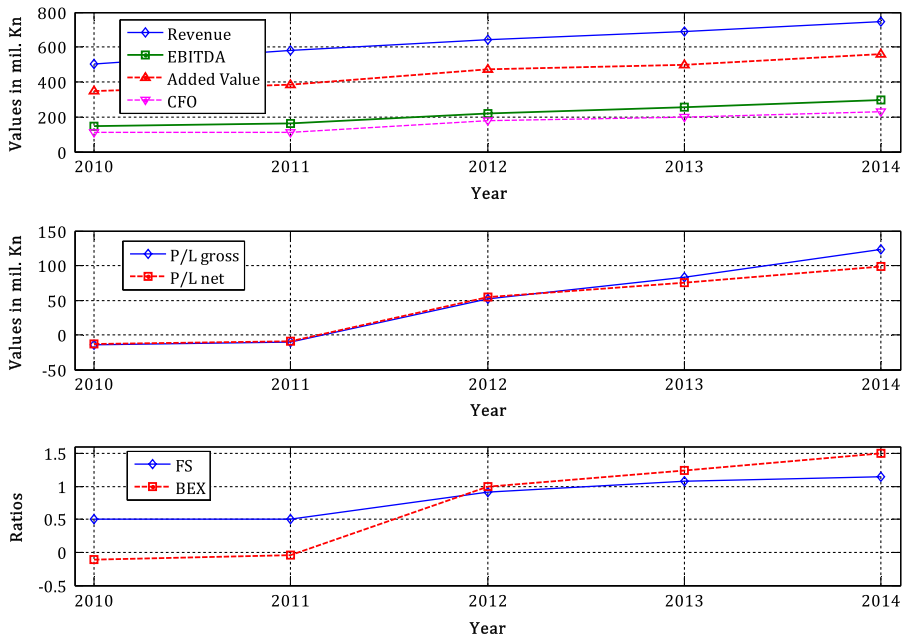
Booking.com ([www.booking.com](http://www.booking.com)) as the average score of all rated hotels within a given hotel company.

The calculation of financial parameters: Revenue, EBITDA, Added Value, Cash from Operation (CFO), Gross Profit (P/L gross), Net Profit (P/L net), Financial Strength (FS) and Business Excellence (BEX), that are presented in Table 5 and shown in Figures 7, 8 and 9, makes it possible to compare trends, as illustrated in the proposed conceptual model for synchronising growth and development strategies in the hotel industry (Figure 6).

**Table 5.** Financial parameters for trend analysis in five-year period (2010–2014).

Hotel Co.	Year	Financial parameters (in mil. Kn)						Ratios	
		Revenue	EBITDA	Added Value	CFO	P/L gross	P/L net	FS	BEX
A	2010	505.59	149.05	347.49	108.94	-13.68	-13.16	0.50	-0.11
	2011	581.08	164.07	386.78	110.88	-10.13	-8.45	0.50	-0.04
	2012	643.99	217.12	473.27	178.70	52.01	55.14	0.91	0.99
	2013	690.81	256.77	497.61	200.83	83.66	75.02	1.08	1.24
	2014	744.71	294.78	557.48	230.51	123.91	99.02	1.14	1.50
B	2010	440.20	120.89	296.66	86.68	-12.85	-12.85	1.06	0.17
	2011	522.66	129.53	348.69	115.19	0.07	1.79	1.39	0.46
	2012	745.11	208.61	500.50	213.38	54.03	52.67	2.52	1.26
	2013	806.40	207.81	518.76	235.50	35.12	58.65	1.23	0.84
	2014	1065.15	232.19	668.55	211.25	27.27	23.63	1.01	0.49
C	2010	369.02	118.48	249.60	27.11	-34.22	-28.35	0.24	-0.53
	2011	403.57	129.40	275.69	77.63	28.23	22.32	0.70	0.66
	2012	425.15	130.98	283.84	105.03	61.45	48.76	0.99	1.23
	2013	440.83	135.95	293.27	129.09	71.41	71.41	1.23	1.62
	2014	425.61	127.20	289.19	107.21	45.48	45.48	1.11	1.09

Source: Authors.



**Figure 7.** Financial parameters for Hotel Company A. Source: Authors.

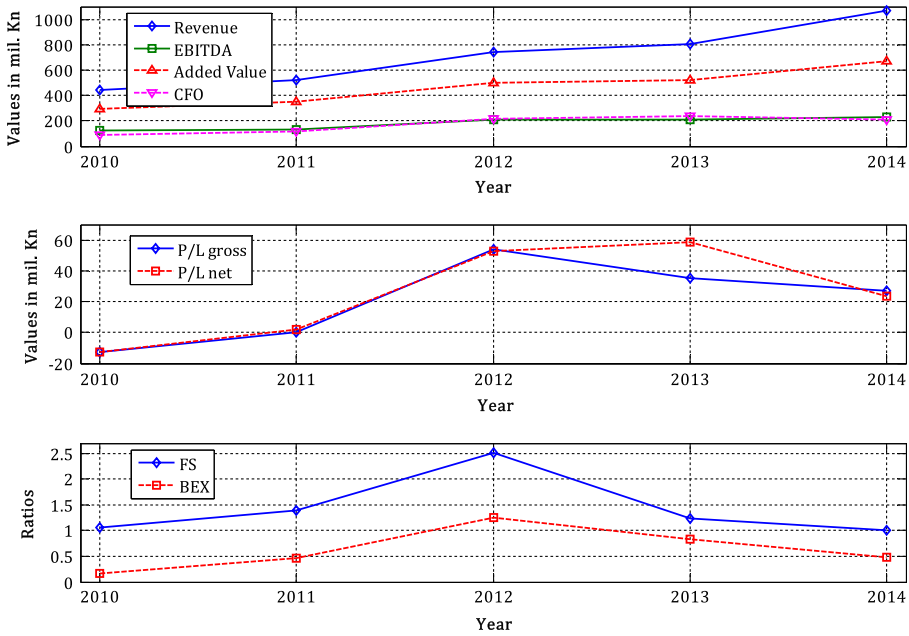


Figure 8. Financial parameters for Hotel Company B. Source: Authors.

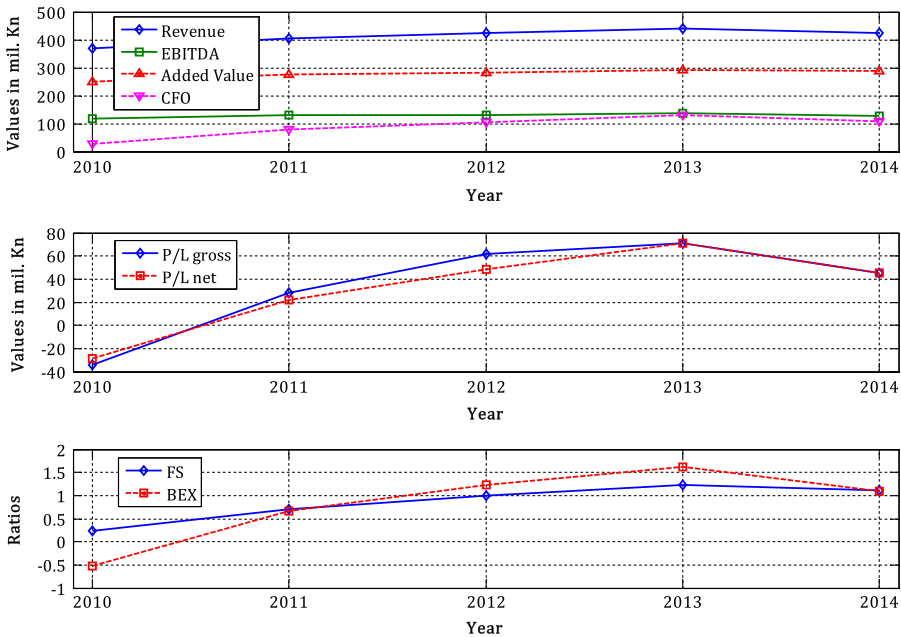


Figure 9. Financial parameters for Hotel Company C. Source: Authors.

In the period 2010–2014, the parameters Revenue, EBITDA, Added Value and Cash from Operation (CFO) of the hotel company A all display the same trend. The parameters Gross Profit (P/L gross) and Net Profit (P/L net), Financial Strength (FS) and BEX, however, do

not fully match this trend. The trends of Profit and Financial Strength are more similar to the trends of Business Excellence and Revenue, respectively. Only in the period 2010–2011 do all examined categories show similar trends.

The hotel company B also recorded similar trends across all categories in the period 2010–2011. In the period 2011–2012 the trend of Financial Strength approximately matched the trends of Profit and Revenue, while the trend of the Business Excellence parameter was closer to the trend of Added Value. In the period 2012–2014, the trends by category completely diverge. For that period, the parameters Revenue and EBITDA, Added Value and CFO, Gross Profit, Financial Strength and Excellence could be grouped into the same categories.

Similar trends are observed in the period 2010–2014 in the parameters Revenue, EBITDA, Added Value and CFO of the hotel company C. In that period, the parameters Gross and Net Profit, Financial Strength and Excellence show a similar trend, which differs from the trend of the categories Revenue, EBITDA, Added Value and CFO.

The values of input variables for calculation of fuzzy logic-based growth-development synchronisation coefficient in five-year period (2010–2014) for observed hotel companies A, B and C are given in Table 6.

Based on shown input variables one can conclude that all observed hotel companies need improvements and additional investment in business processes (Table 1). However, the results of continuous increase over the years in all analysed indicators of the hotel company A indicate constant investments in the development of business processes. In terms of need for additional improvements, determined by unsatisfactory benchmark of Asset turnover ratio, they are expected in two primary areas of asset management: working capital management and management of long-term assets (Palepu & Healy, 2008). Deviations from the reference values also indicate the need for improvement in the area of human resource effectiveness (Helfert, 2005) as well as in the area of effective revenue management that for example can be achieved by using variable prices to control demand (Noonea et al., 2011). Insufficient values of EBITDA / asset indicator show the need for improvements in business processes regarding asset utilisation, operating processes and management of operating expenses (Helfert, 2005). The need for larger additional improvements in terms

**Table 6.** Values of input variables in five-year period (2010–2014) for hotel companies A, B and C.

Hotel Co.	Year	Asset turnover	EBITDA / asset	Net income / capital	BEX index	Value for money
A	2010	0.2702	0.0761	-0.0135	-0.1129	8.0187
	2011	0.2969	0.0796	-0.0086	-0.0450	7.9106
	2012	0.3438	0.1077	0.0526	0.9906	7.7032
	2013	0.3472	0.1240	0.0658	1.2442	7.9714
	2014	0.3631	0.1325	0.0816	1.4960	8.1021
B	2010	0.2748	0.0726	-0.0103	0.1725	7.9000
	2011	0.2520	0.0605	0.0011	0.4595	7.8970
	2012	0.3565	0.0961	0.0307	1.2560	7.9871
	2013	0.2846	0.0702	0.0300	0.8397	8.0150
	2014	0.3442	0.0727	0.0114	0.4886	7.8454
C	2010	0.3020	0.0940	-0.0402	-0.5276	7.1719
	2011	0.3223	0.1009	0.0307	0.6615	7.4012
	2012	0.3381	0.1006	0.0628	1.2294	7.3784
	2013	0.3341	0.0991	0.0843	1.6178	7.5614
	2014	0.3208	0.0923	0.0509	1.0891	7.6871

Source: Authors.

of adjustments to industry conditions, competitive strategy analysis, operating management, investment management and liability management, shown by Net income / equity ratio (Palepu & Healy, 2008), is required in hotel companies B and C, while the values of the same ratio indicate the necessity for some minor improvements in hotel company A. The descending order in the BEX indicator in hotel company B in the period from 2012 to 2014 points to its weak sustainability (Metaxas et al., 2016). The results provided by calculated BEX index indicate the need for improvement in the area of leadership excellence, production and supply chain, strategic agility, partnerships and intellectual capital in order to increase the business excellence (Metaxas et al., 2016) within all three observed hotel companies. The results of the last given parameter Value for money, which in all observed companies can be described as very good, point to additional improvements that can be applied in conjunction with better guest satisfaction. In order to create the sustainable brand loyalty, the design of a guest satisfaction surveying programme has to be linked to cost-benefit analysis as well (Brlečić Valčić & Bagarić, 2015).

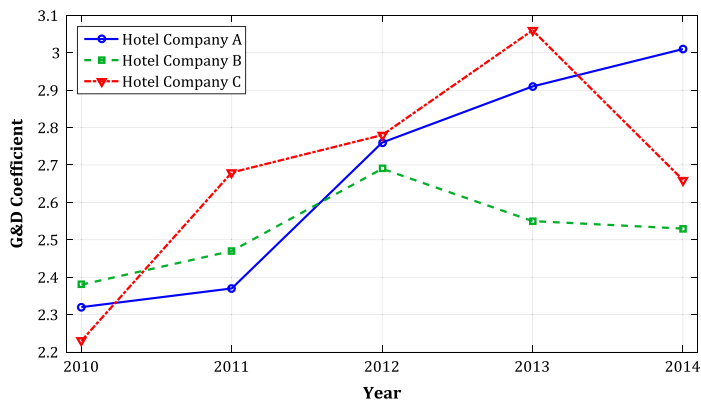
The fuzzy logic-based growth-development synchronisation coefficients calculated for each year in the observed period and for the five-year averages are presented in Table 7 and Figure 10.

Presented results indicate the need for additional improvements in the area of defining core competencies and skills, defining the core product or service, determination of the relationship between core competencies and skills, adjustment of the core competencies, and putting in place a strategic process for managing core competencies for all observed companies (Table 2).

**Table 7.** Growth-development synchronisation coefficients for analysed hotel companies.

	Hotel Company A	Hotel Company B	Hotel Company C
G&D Coefficient in 2010	2.32	2.38	2.23
G&D Coefficient in 2011	2.37	2.47	2.68
G&D Coefficient in 2012	2.76	2.69	2.78
G&D Coefficient in 2013	2.91	2.55	3.06
G&D Coefficient in 2014	3.01	2.53	2.66
G&D Coefficient in 2010–2014	2.72	2.59	2.67

Source: Authors.



**Figure 10.** The fuzzy logic-based growth-development synchronisation coefficient values for hotel companies A, B and C. Source: Authors.

The results also show that the hotel company A has the best strategy and the best growth-development synchronisation. Through continued investment in revenue management and business organisation, this hotel company has good prospects of achieving excellent performance, thus ensuring stable business operations in the long term.

The hotel company B achieved good results in G&D coefficient growth in the period 2010–2012, but after that time its G&D coefficient begins to drop rapidly. To ensure stable performance in the long-term period, it will need to make much greater investments in revenue management and business organisation.

The hotel company C is in a similar situation. After steadily growing in the period 2010–2013, the company's G&D coefficient begins to plummet, primarily because of low revenue growth in 2014. To achieve higher revenue growth and, in turn, improve other financial results, the company should increase considerably its investment in revenue management.

## 5. Conclusion

The results obtained in this research provide the evidence by which hotel companies may determine important information using a proposed conceptual model for synchronising growth and development strategies which can consequently reveal deficiencies in their business processes. These deficiencies can have a significant impact on business development in the context of a stable and sustainable growth.

Previous findings showed that proper selection of business strategies can be considered as a vital determinant both in defining the company and in establishing and forecasting value creation and preservation. Mentioned categories are closely tied to long-term company operations and expected business and financial results. Hotel companies need to examine the connections between business operations, organisational structures, management and strategies. Considering the relationship between core competencies, skills, performance and corporate growth, the values and behaviours that contribute to the sustainable business of an organisation can be established. Furthermore, in order to reach a sustainable business, strategies have to be focused on enhancing customer value by efficient customer management and with expanding revenue opportunities. For that reason it may be said that good revenue management is a crucial precondition to the strategic benchmarking for value process. Effective revenue management helps to generate greater revenue and greater profitability which are preconditions to the long-term growth and development of a company and the building of long-term customer relationship that is very important in hotel industry.

The guidelines from previous research were used as an orientation in selecting the parameters that enable monitoring of business processes for the purpose of synchronisation of growth and development strategies in hotel companies. Asset turnover coefficient was proposed for monitoring the required improvements in revenue management, cost leadership strategy, productive asset utilisation, investment management, working capital management and management of long-term assets. EBITDA / asset ratio was selected as an appropriate in examination of the effective asset utilisation, operating processes and management of operating expenses. On the other hand, the use of Net income / equity ratio provides information about the necessary improvements in terms of adjustments to industry conditions, competitive strategy analysis, operating management, investment management and liability management. BEX index provides information on business excellence and the necessary investments in the leadership excellence, production and supply chain, strategic

agility, continuous improvement, partnerships and intellectual capital. The last parameter Value for money was selected for testing guest satisfaction in the context of the examination of their intention to regularly buy products and services thus providing a flow of revenue which the management can transform into profit, free cash flow or use to attract investors.

Deployment of the growth-development synchronisation coefficient based on fuzzy logic TOPSIS approach and design of a conceptual model for synchronising growth and development strategies in the hotel industry can be highlighted as the most significant contribution of this research. By using fuzzy logic TOPSIS approach the appropriate judgement process was enabled, as well as creation of reasonable values for the weighting factors. In this way, the proposed G&D coefficient presents an effective and reliable indicator of required investments in business operations in order to ensure stable and sustainable growth of hotel companies in future periods.

However, the research does have some limitations and these are particularly related to the application possibilities of the proposed model. Namely, the proposed model is created and tuned only for hotel companies and is tested only for hotel companies in Croatia. This is particularly important in terms of input variable ranges that can vary and therefore it is hard to find generalised ranges that can cover all possibilities. Thus, as with any fuzzy based model, it is hard to ensure complete generality of the model, but on the other hand, the tuning and adaptation of this model, if necessary, is relatively simple and this should be emphasised as a very convenient advantage of this approach.

With respect to the aforementioned limitations and as a part of a future research, appropriate sensitivity and uncertainty analysis is recommended to be done, particularly on how various values and ranges of input variables affect the G&D coefficient value. Additional future research could also include certain modifications of the proposed model in order that it can be implemented and used within any other industry sector beside the hotel industry.

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## Disclosure statement

No potential conflict of interest was reported by the authors.

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